

Meteorological summary for Chile, January, 1930 (by J. Bustos Navarrete, Observatorio del Salto, Santiago, Chile).—The diminution in activity of solar radiation coincided with a noticeable weakening of atmospheric circulation over the South Pacific. The number of depressions was very small, and the paths of these were shifted very much toward the south. Unsettled weather and rains were generally limited to the southern part of the continent between Magallanes and Chiloe; in the remainder of the country, from Valdivia northward, conditions were very stable.

Temperatures were not very high in the central zone, rarely exceeding 86° to 90° F., in contrast to much higher readings in previous years.

On the central and northern coasts the mornings were frequently cloudy or foggy.

The only anticyclonic centers worth mentioning were those charted on the 6th, 12th, 15th, and 25th and moving for the greater part from latitude 40° to 45° S. toward Argentina.—*Translated by W. W. R.*

Death of Dr. L. Coussirat de Araujo in charge of the meteorological service of Rio Grande do Sul, Brazil.—We regret to learn of the death in February of this year of Prof. Dr. Ladislau Coussirat de Araujo in his fortieth year. Doctor Araujo at the time of his death was the director of the Instituto Astronomico e Meteorologico, Escola Engenharia, of Porto Allegro, Brazil. He was a distinguished civil engineer with strong leanings toward meteorology and was in charge of the meteorological service of the State of Rio Grande do Sul. His meteorological education was received in France, England, and the United States.—*A. J. H.*

BIBLIOGRAPHY

C. FITZHUGH TALMAN, in Charge of Library

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

Dines, L. H. G.

Dines balloon meteorograph and the method of using it. London. 1929. iv, 47 p. figs. plates. 24½ cm. (Met. off. 321.)

Fassig, Oliver L.

On the Frequency of hurricanes in the vicinity of Porto Rico. 10 p. figs. plate. 27 cm. (Repr.; Porto Rico Journ. pub. health & tropical med., v. 5, no. 2, Dec., 1929.)

Forel, F. A.

"Seiches" of lakes. 5 p. 22 cm. (Le Guide scient., Oct., 1885.)

Gião, Antonio.

La mécanique différentielle des fronts et du champ isallobarique. Paris. 1929. 127 p. figs. plates. 33 cm. (Off. nat. mét. France. Memorial. No. 20.)

Ginestous, G.

La richesse en vapeur d'eau de l'atmosphère dans le Sud tunisien. Son action sur la vie végétale. Tunis. 1928. 8 p. 24½ cm. (Extr.; Bull. de la dir. gén. de l'agric., du comm. et de la colonis. 3e trim. 1928.)

Une zone d'extension possible de la culture de l'olivier à signaler aux oléiculteurs tunisiens. 11 p. plate. 24½ cm. (9e cong. internat. d'oléicult. Tunis, Sousse. Sfax (Tunisie) du 26 oct. au 8 nov., 1928.)

Hutchinson, Howard B.

Fog situation in the United States During the Winter 1928-29. Cambridge. 1930. 25 p. plates. 28 cm. (Mass. inst. tech. Met'l course. Prof. notes, no. 3.)

Kleinschmidt, E.

Die Häufigkeit dürre und nasser Monate in Württemberg und Hohenzollern. Stuttgart. 1929. p. 186-205. figs. 28½ cm. (Sonderab.; Württemberg. Jahrb. für Statistik und Landesd. Jahrg. 1928.)

Simpson, G. C.

Past climates. (The Alexander Pedler lecture, 1929.) Manchester. 1930. 34 p. figs. 21½ cm. (Manchester lit. & philos. soc. Sess. 1929-30. Mem. & proc. v. 74.)

SOLAR OBSERVATIONS

SOLAR AND SKY RADIATION MEASUREMENTS DURING FEBRUARY, 1930

By HERBERT H. KIMBALL, Solar Radiation Investigations

For reference to descriptions of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to this volume of the REVIEW, page 26.

Table 1 shows that solar radiation intensities were close to the normal intensity for February at Washington, D. C., and slightly below at Madison, Wis., and Lincoln, Nebr.

Table 2 shows a deficiency in the total solar radiation received on a horizontal surface directly from the sun and diffusely from the sky at Madison, Lincoln, New York, Fresno, and La Jolla, and an excess at Washington, Twin Falls, and Chicago, as compared with the normal amount received at the respective stations in February.

No skylight polarization measurements were obtained at Madison during the month. At Washington measurements obtained on four days give a mean of 63 per cent and a maximum of 66 per cent on the 10th. These values are slightly above the corresponding averages for February at Washington.

TABLE 1.—Solar radiation intensities during February, 1930

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.

Date	Sun's zenith distance											Noon	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°			
	75th mer. time	Air mass											Local mean solar time
		A. M.					P. M.						
		e.	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0		
Feb. 10.....	<i>mm.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>		
Feb. 10.....	2.26			1.24	1.35		1.29				1.96		
Feb. 11.....	1.88	0.64	0.83	0.96	1.19		1.81				1.96		
Feb. 12.....	3.45	0.49	0.62	0.81	0.88		1.17	0.93	0.57		3.30		
Feb. 14.....	3.30	0.75	0.88	1.10	1.23		1.27	1.10	0.99	0.88	2.49		
Feb. 27.....	9.83			0.88	1.11						4.95		
Means.....		0.63	0.78	1.00	1.15		1.23	(1.02)	(0.78)	(0.88)			
Departures.....		-0.07	-0.02	+0.03	-0.02		+0.04	+0.05	-0.06	+0.12			

Madison, Wis.

Feb. 8.....	2.06			1.07	1.23						2.74
Feb. 10.....	1.52			1.13			1.33	1.20			1.37
Feb. 13.....	1.78			1.15	1.37						1.96
Feb. 14.....	0.86			1.10							0.91
Feb. 15.....	0.43			1.14	1.41						0.69
Feb. 19.....	5.16			0.90	1.12						3.63
Feb. 26.....	3.99			1.11	1.29						3.81
Means.....				1.09	1.28		(1.33)	(1.20)			
Departures.....				-0.12	-0.09		-0.04	+0.02			

Lincoln, Nebr.

Feb. 1.....	4.17		0.89	1.05							4.95
Feb. 10.....	2.62					1.30	1.11	0.95	0.81		3.30
Feb. 17.....	4.57		1.06	1.21	1.38						5.79
Feb. 19.....	5.16		0.98	1.12							6.27
Feb. 26.....	3.45		1.07	1.24	1.36		1.32	1.11	0.99	0.88	3.45
Means.....			1.00	1.16	(1.37)		(1.31)	(1.11)	(0.97)	(0.84)	
Departures.....			-0.04	-0.03	-0.01		-0.05	-0.05	-0.06	-0.08	

¹ Extrapolated.

TABLE 2.—Total solar radiation (direct+diffuse) received on a horizontal surface

[Gram-calories per square centimeter]

Week beginning	Average daily totals									
	Washington	Madison	Lincoln	Chicago	New York	Pittsburgh	Gainesville	Twin Falls	Fresno	La Jolla
1930	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Jan. 29.....	160	170	219	105	29	190	293	228	296	280
Feb. 5.....	221	206	273	137	142	148	292	277	322	186
Feb. 12.....	242	219	250	126	145	205	273	394	368	250
Feb. 19.....	279	199	268	152	155	163	439	249	251	289
Jan. 29.....	-39	-21	-8	-3	-58			+13	+4	+33
Feb. 5.....	+18	-3	+13	+25	+13			+11	+8	-61
Feb. 12.....	+16	-10	-32	-2	+5			+97	+23	-5
Feb. 19.....	+22	-51	-36	-3	-19			-40	-110	-57
Accumulated departure, Feb. 26.....	-623	-602	-161	+476	-581			+2103	-421	+1778

¹ 5-day mean.² 4-day mean.³ 6-day mean.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. C. S. Freeman, Superintendent U. S. Naval Observatory. Data furnished by Naval Observatory in cooperation with Harvard, Yerkes, Mount Wilson, and Perkins observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area, including spots and groups, is given for each day in the last column.]

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longi-tude	Latitude	Spot	Group	
1930	h m	°	°	°			
Feb. 1 (Naval Observatory).	12 25	-77.0	6.7	-7.0		217	
		-47.0	36.7	+19.5		231	
		-21.0	62.7	+6.5	123		
		+34.5	118.2	+17.0		154	
		+66.0	149.7	+11.0		77	832
Feb. 2 (Mount Wilson)---	12 20	-80.0	350.7	+8.0		238	
		-80.0	350.7	-3.0	14		
		-80.0	350.7	-13.0		20	
		-64.0	6.7	-8.0		223	
		-35.0	35.7	+21.0		205	
		-8.0	62.7	+8.0	113		
		+0.5	71.2	-5.5		17	
		+60.0	120.7	+19.0		144	974
Feb. 3 (Naval Observatory).	11 23	-71.5	346.5	-12.5	31		
		-69.5	348.5	-18.0		93	
		-66.0	352.0	+8.0	216		
		-65.5	352.5	-3.5	25		
		-50.5	7.5	-7.0		262	
		-48.0	10.0	+15.5	6		
		-25.0	33.0	+13.0	6		
		-22.0	36.0	+20.0		231	
		-8.0	50.0	-12.0		9	
		+5.0	63.0	+8.0		77	
		+13.5	71.5	-5.0		108	
		+61.5	119.5	+17.5		170	1,234
Feb. 4 (Yerkes)-----	17 18	-71.5	330.1	-13.0	23		
		-61.0	340.6	-12.5	25		
		-56.5	345.1	-20.0	88		
		-49.5	352.1	-19.5		168	
		-48.5	353.1	+7.0		220	
		-47.5	354.1	-3.5	36		
		-36.5	5.1	-8.0		105	
		-29.5	12.1	-7.5		83	
		-9.0	32.6	+12.0	7		
		-6.0	35.6	+20.0		217	
		+7.0	48.6	-14.0	61		
		+11.0	53.6	-12.0	49		
		+21.5	63.1	+7.5		78	
		+27.0	68.6	-5.0	13		
		+33.5	75.1	-4.5	19		1,192
Feb. 5 (Naval Observatory).	11 24	-52.5	339.1	-13.0		170	
		-41.5	350.1	-18.5		216	
		-38.5	353.1	+7.5		216	
		-37.5	354.1	-3.5	12		
		-25.0	6.6	-6.5		170	
		-1.0	30.6	+12.5	3		
		+4.0	35.6	+19.5		123	
		+19.5	51.1	-12.5		185	
		+32.0	63.6	+7.5		77	
		+40.5	72.1	-5.5		22	1,194
Feb. 6 (Mount Wilson)---	13 50	-46.0	331.2	-13.0		61	
		-37.0	340.2	-13.0		50	
		-28.0	349.2	-19.0		143	
		-24.0	353.2	+9.0		157	
		-23.0	354.2	-3.0	22		
		-10.0	7.2	-10.0		89	
		+20.0	37.2	+21.0	71		
		+33.0	50.2	-13.0		233	
		+48.0	65.2	+8.0	87		913
Feb. 7 (Naval Observatory).	13 23	-26.0	338.2	-13.0		170	
		-12.5	351.7	-19.0		231	
		-11.5	352.7	+8.0		93	
		-10.0	354.2	-4.0	15		
		+1.5	5.7	-6.5		31	
		+32.5	36.7	+19.0	108		
		+46.5	50.7	-12.5		309	
		+59.5	63.7	+7.0		77	
		+71.5	75.7	-3.5	123		1,157
Feb. 8 (Naval Observatory).	11 25	-72.5	279.6	+13.0		22	
		-12.0	340.1	-14.0		170	
		+1.0	353.1	-19.0		370	
		+1.0	353.1	+8.0		139	
		+2.5	354.6	-4.0	12		
		+15.0	7.1	-7.5		77	
		+45.0	37.1	+19.5	108		
		+59.5	51.6	-12.5		293	
		+74.0	66.1	+8.0	62		1,253